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(54) **A technique for the detection and removal of local defects in digital continuous-tone images.**

(57) The present invention is a method for automatically detecting and correcting a wide range of local digital image defects with minimal user intervention. The detection process employs brightness and color thresholds in conjunction with magnitude thresholds on residuals of nonlinear spatial filters to separate defects from scene content with minimal confusion. The detected defects are then cosmetically corrected by combinations of nonlinear smoothing and grey-scale erosion. Several options are outlined for the feature selection, detection, and cleaning operations depending on source type and computational constraints.

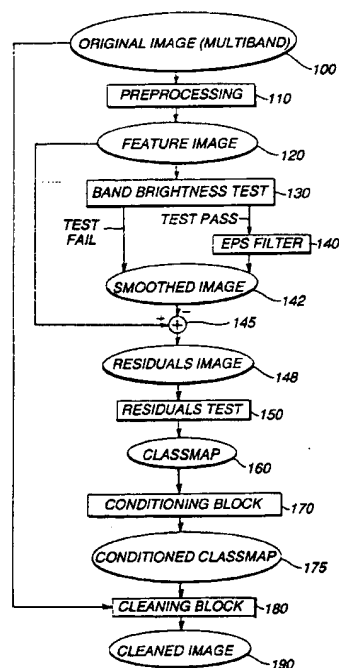


FIG. 2

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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 6449

| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |   |   |
|---|--|---|---|
| Category  | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim                                     | CLASSIFICATION OF THE APPLICATION (Int.Cl.5)    |
| A   | US-A-5 036 405 (KOJIMA)<br>* column 4, line 25 - column 5, line 31 *<br>* column 5, line 65 - column 6, line 12 *<br>---   | 1-3,7-11  | G06F15/68                                       |
| A   | US-A-5 142 589 (LOUGHEED ET AL.)<br>* column 3, line 27 - line 42 *<br>* column 4, line 12 - line 18 *<br>---  | 1,4,5,10  |   |
| A   | EP-A-0 398 861 (POLAROID CORP)<br>* abstract *<br>* page 3, line 1 - line 11 *<br>* page 3, line 43 - page 4, line 35 *<br>---   | 1-3,7-11  |   |
| A   | US-A-4 975 972 (BOSE ET AL)<br>* column 4, line 57 - column 5, line 2 *<br>* column 6, line 15 - line 29 *<br>* column 7, line 57 - column 8, line 18 *<br>---   | 1,4,5,10  |   |
| A   | SIGNAL PROCESSING,<br>vol.21, no.4, December 1990, AMSTERDAM, NL<br>pages 289 - 301<br>J M H DU BUF & T G CAMPBELL 'A<br>Quantitative Comparison of Edge-Preserving<br>Smoothing Techniques.'<br>----- |   |   |
| The present search report has been drawn up for all claims  |  |   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.5)<br>G06F |
| Place of search<br>THE HAGUE  |  | Date of completion of the search<br>29 September 1994 | Examiner<br>Gonzalez Ordonez, O                 |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |  |   |   |